



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/665,634	09/19/2003	Charles L. Gray JR.	EPA 680-03	6097

7590 06/16/2005

David H. Read
2565 Plymouth Road
Ann Arbor, MI 48105

EXAMINER

TRIEU, THAI BA

ART UNIT	PAPER NUMBER
----------	--------------

3748

DATE MAILED: 06/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/665,634

Applicant(s)

GRAY, CHARLES L.

Examiner

Thai-Ba Trieu

Art Unit

3748

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 2 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☒ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-21 is/are allowed.
- 6) ☐ Claim(s) ____ is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: ____.

DETAILED ACTION

The Preliminary Amendment filed on February 13, 2004 is acknowledged.

This application is in condition for allowance except for the following formal matters:

1. UTILITY PATENT APPLICATION TRANSMITTAL:

Applicant is required to resubmit the Utility Patent Application Transmittal, since there has been a typo error in the serial number of the prior application (See Attached copy of the Utility Patent Application Transmittal).

2. INFORMATION DISCLOSURE STATEMENT:

Applicant is required to submit an Information Disclosure Statement including all patents, publications, or other information listed in the specification for consideration by the Office.

3. IN THE ABSTRACT:

Since the abstract is too long, applicant is required to submit a substitute abstract to meet the requirement set forth below:

Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that **the abstract not exceed 150 words in length** since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure

sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

4. IN THE SPECIFICATION:

- On Page 2, line 13, "***application number 10/241,229***" should be replaced by – ***application number 10/214, 229*** – (*for correcting typo error*).

- On Page 4, line 19, "***U.S. Patent No. 5,523,529***" should be replaced by – ***U.S. Patent No. 6,523,529*** – (*for correcting typo error*).

- On Page 13, line 20, line 20, Page 16, lines 2 and 6, "***compressor motor 27***" should be replaced by – ***expander motor 27*** – (*for consistency*).

5. IN THE DRAWINGS:

The drawings include the following reference character(s) not mentioned in the description: "***15***" and "***34***" (See Figure 1). Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is

Art Unit: 3748

being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

5. IN THE CLAIMS:

- In claim 8, line 4, "***if necessary***" should be deleted (*for addressing a rejection 112, second paragraph*).

Conclusion

Prosecution on the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

A shortened statutory period for reply to this action is set to expire **TWO MONTHS** from the mailing date of this letter.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Matsunaga et al. (US Patent Number 6,877,369 B2) disclose an EGR-gas flow rate estimation apparatus for an internal combustion engine.

- Araki (Pub. Number US 2004/0261414 A1) discloses a combustion control of internal combustion engine.

Art Unit: 3748

- Oota et al. (US Patent Number 6,701,244 B2) disclose an excess air factor control device for an internal combustion engine.
- Itoyama et al. (US Patent Number 6,681,744 B2) disclose a fuel injection control device for a diesel engine.
- Umezono et al. (US Patent Number 6,550,445 B2) disclose a spark ignition direct injection engine with supercharger.
- Flynn et al. (US Patent Number) disclose a premixed charge compression ignition engine with optimal combustion control.
- Chanda et al. (US Patent Number 6,067,973) discloses a method and system for late cycle oxygen injection in an internal combustion engine.
- Fukuma (US Patent Number 6,000,385) discloses a combustion engine with EGR apparatus.
- Togai (US Patent Number 5,704,340) disclose an excess air rate detecting apparatus and an excess air rate control apparatus for an engine.
- Chujo et al. (US Patent Number 4,942,860) discloses an engine control without a directly fueled injection into the combustion chamber.
- Nishada et al. (US Patent Number) disclose an exhaust gas recirculation control system for an internal combustion engine.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thai-Ba Trieu whose telephone number is (571) 272-4867. The examiner can normally be reached on Monday - Thursday (6:30-5:00).

Art Unit: 3748

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas E. Denion can be reached on (571) 272-4859. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TTB
June 14, 2005



Thai-Ba Trieu
Primary Examiner
Art Unit 3748